What Do We Know about Knowledge Brokers in Paediatric Rehabilitation? A Systematic Search and Narrative Summary

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ABSTRACT

Purpose: To conduct a systematic review of the literature related to the use of knowledge brokers within paediatric rehabilitation, and specifically to determine (1) how knowledge brokers are defined and used in paediatric rehabilitation and (2) whether knowledge brokers in paediatric rehabilitation have demonstrably improved the performance of health care providers or organizations. **Methods:** The MEDLINE, CINAHL, EMBASE, and AMED databases were systematically searched to identify studies relating to knowledge brokers or knowledge brokering within paediatric rehabilitation, with no restriction on the study design or primary aim. Following review of titles and abstracts, those studies identified as potentially relevant were assessed based on the inclusion criteria that they: (1) examined some aspect of knowledge brokers/brokering in paediatric rehabilitation; (2) included sufficient descriptive detail on how knowledge brokers/brokering were used; and (3) were peer-reviewed and published in English. **Results:** Of 1513 articles retrieved, 4 met the inclusion criteria, 3 of which referenced the same knowledge broker initiative. Two papers used mixed methods, one qualitative methodology, and one case presentation. Because of the different methods used in the included studies, the findings are presented in a narrative summary. **Conclusions:** This study provides an overview of the limited understanding of knowledge brokers within paediatric rehabilitation. Knowledge broker initiatives introduced within paediatric rehabilitation have been anchored in different theoretical frameworks, and no conclusions can be drawn as to the optimum combination of knowledge brokering activities and methods, nor about optimal duration, for sustained results.

Key Words: evidence-based practice; knowledge translation; pediatrics.

RÉSUMÉ

Objectif : Procéder à une critique systématique des publications portant sur l'utilisation des courtiers en connaissances dans le domaine de la réadaptation pédiatrique et déterminer plus précisément (1) comment les courtiers du savoir sont définis et utilisés en réadaptation pédiatrique et (2) s'ils ont amélioré de façon démontrable le rendement de fournisseurs ou d'organisations de soins de santé. **Méthodes :** On a effectué une recherche systématique dans les bases de données MEDLINE, CINAHL, EMBASE et AMED pour y trouver des études portant sur les courtiers ou le courtage en connaissances en réadaptation pédiatrique, sans restriction quant à la conception ou à l'objectif principal de l'étude. Après une revue des titres et des résumés, les études jugées éventuellement pertinentes ont été évaluées en fonction des critères d'inclusion suivants: (1) elles portaient sur certains aspects des courtiers ou du courtage en connaissances dans le domaine de la réadaptation pédiatrique; (2) elles incluaient des détails suffisamment descriptifs de la façon d'utiliser les courtiers ou le courtage en connaissances; (3) elles ont été critiquées par des pairs et publiées en anglais. **Résultats :** Sur 1 513 articles extraits, 4 répondaient aux critères d'inclusion, dont 3 mentionnaient la même initiative sur les courtiers en connaissances. Dans deux communications, les auteurs ont utilisé des méthodes mixtes, une méthodologie qualitative et un exposé de cas. Parce qu'on a utilisé des méthodes différentes dans les études incluses, les constatations sont présentées sous forme de résumé narratif. **Conclusions :** Cette étude présente un survol de la compréhension limitée des courtiers en connaissances dans le domaine de la réadaptation pédiatrique. Les initiatives sur les courtiers en connaissances lancées en réadaptation pédiatrique ont reposé sur différents cadres théoriques et il n'est pas possible de tirer de conclusion quant à la combinaison optimale des activités et des méthodes de courtage en connaissances, ni au sujet de leur durée optimale pour produire des résultats soutenus.

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A critical obstacle to transferring research into practice is believed to be the presence of a gap between the producers of research and those who use it.¹⁻⁸ One proposed strategy to bridge this gap is the use of *knowledge brokers*.^{1,7,9-14} The Canadian Health Services Research Foundation (CHSRF [now known as the Canadian Foundation for Healthcare Improvement]) defines knowledge brokering as

one of the human forces behind knowledge transfer [which] helps build relationships and networks for sharing existing research and ideas, and stimulating new work. Knowledge brokering supports evidence-based decision-making by encouraging the connections that ease knowledge transfer.^{9(p. ii)}

Knowledge brokers are positioned at the interface between research and practice, with the goal of facilitating the transfer of research and other evidence between researchers and practitioners. According to the CHSRF, a knowledge broker is a 'go-between' required to bridge the research-practice gap. The importance of transferring research evidence into health care practice and policy has led the fields of knowledge transfer and knowledge brokering to prominence in the past decade.^{1,9-11,15,15-23} There is general consensus that health professionals' clinical practice approaches need to be informed by the best available evidence if they are to remain current.^{16,17} The effectiveness of passive dissemination strategies such as circulating reference articles or attending conferences is generally acknowledged to be limited relative to that of more active strategies involving systematic efforts to encourage adoption of research findings by identifying and overcoming barriers to their use.^{2,23} Knowledge transfer strategies and the role of knowledge brokering are complex;^{1,3,12,14,15} knowledge transfer is a process that extends beyond a simple "push" of information from researchers to decision makers or clinicians.^{2,9,10,21}

Knowledge brokers have been widely implemented in private industry for many years, but have recently gained popularity in health care settings, although there is little more than anecdotal evidence to support their use in this sector.^{10,14,18,21,24} In paediatric rehabilitation, there has been growing interest in how and why rehabilitation clinicians adopt best practices.^{5,7,25,26} Several different approaches have been identified in the literature that underpin the application of knowledge brokers in health care^{1,10,18,19,21,22}; Box 1 summarizes the different approaches to knowledge brokering identified in the literature.

One approach to the use of knowledge brokers is based on a knowledge management model (i.e., knowledge system framework), which relates to the creation, diffusion, and application of information as a way of managing or facilitating knowledge exchange.^{10,18} In this approach, knowledge brokers act as *knowledge managers* who gather, critically appraise, synthesize and tailor

research and other evidence for individuals.^{21,22} In a second approach, knowledge brokers act as *linking agents* focused at the interface between the "creators" and "users" of knowledge. In this type of linkage and exchange model (i.e., transactional framework), knowledge brokers might use knowledge or knowledge-based products or services (e.g., workshops) as key tools of knowledge exchange.^{10,18} In a third approach, knowledge brokers act as *capacity builders* who work to enhance access to knowledge by providing training to knowledge users.^{10,18} This last model of capacity building sits within a social change framework, which acknowledges that changes in access to knowledge can have important consequences for the political system, human rights, power relationships, social roles, and/or employment patterns of a specific group.¹⁸ Thus, knowledge brokering in this context might involve activities that enhance access to knowledge, with the expectation that such access may directly or indirectly lead to positive social outcomes.¹⁸

Each of these approaches has been described to varying extents in the literature. While the importance of translating knowledge into action is generally accepted, each approach to knowledge brokering draws on a different theoretical framework. Therefore, as Box 1 shows, the strategies vary with respect to how knowledge brokers are described and used. While the different models have some factors in common, the overall diversity in the application of these roles creates some challenge in determining whether or not an approach could be valuable and, if so, in which settings. Indeed, knowledge brokering is considered to be adaptable to different clinical and organizational contexts, with the understanding and expectation that different applications may be required in different settings and among different health provider groups.^{14,24} Thus, improving our understanding of the effectiveness of knowledge brokers first requires descriptive assessments of the use and processes of knowledge brokers and how knowledge brokering is applied in a specific context.^{1,10,13} Given the varied application of knowledge brokers within healthcare and the lack of consistency in the evidence for their effectiveness, it is useful to explore knowledge brokering in a specific area of clinical practice.

The objective of our research, therefore, was to conduct a systematic review of the literature related to the use of knowledge brokers in paediatric rehabilitation, specifically seeking to determine (1) how knowledge brokers are defined and used in paediatric rehabilitation, and (2) whether knowledge brokers in this area of practice have demonstrably improved the performance of health care providers or organizations.

METHODS

Search strategy

To ensure that we captured the maximum number of studies in rehabilitation sciences, we systematically

Box 1 Approaches to knowledge brokering^{1,10,18,19,21,22}

Framework—model	Role descriptions and terms
Knowledge System Framework—knowledge management model ^{1,10,18,21,22}	<ul style="list-style-type: none"> • This framework relates to the creation, diffusion, and use of knowledge. • In this model, brokers facilitate or manage the above.
Transactional Framework—linkage and exchange model ^{1,10,18,21}	<ul style="list-style-type: none"> • In this framework, brokering focuses on the interface between the creators and users of knowledge. • Brokers are seen as linking agents who seek to foster links between creators and users.
Social Change Framework—capacity building model ^{1,10,18,19,21}	<ul style="list-style-type: none"> • This framework views human interaction as the engine that drives research into practice. • Brokers are seen as capacity builders and change agents.

searched four databases: (1) MEDLINE, (2) CINAHL (Cumulative Index to Nursing & Allied Health Literature), (3) EMBASE (Excerpta Medica Database), and (4) AMED (Allied and Complementary Medicine Database)—for journal articles and reviews published between January 1, 2001, and December 31, 2011. We chose this specific timeframe to capture the earliest known references to knowledge brokers in the health literature.⁹ After this initial search, we used the same systematic review process to search the literature from January/February 2012 to confirm the availability of other newer references, but none were identified in this period. We also reviewed the reference lists of the articles that met the inclusion criteria to identify any other potential additional papers for inclusion. An initial database search found no prior systematic reviews specific to knowledge brokers in paediatric rehabilitation.

We identified search terms through an iterative process that began with reviewing seminal²⁴ and emerging literature on knowledge translation, knowledge sharing, and research adoption^{26–35} to determine the potential diversity in the literature with respect to knowledge brokering terms and approaches. Our aim was to identify and use search terms that maintained a focus on the exchange and acquisition components of knowledge and learning that are common to all definitions of knowledge brokers (see Box 1), without narrowing the search so much that potentially relevant papers would be missed. Through this iterative process, we identified the following search terms: *knowledge brokering*, *knowledge broker(s)*, *opinion leader*, *knowledge facilitator*, *knowledge champion*, *linking agent*, *change agent*, *knowledge manager*, and *knowledge conduit*. Figure 1 outlines our search strategy.

Selection of articles

After removing duplicate studies, we reviewed titles and abstracts; for any study potentially relevant to the use of knowledge brokers in paediatric rehabilitation, we retrieved the full text and assessed the article for applicability to the review questions. Where the title and/or abstract was inconclusive, or no abstract was available, the full text was also retrieved and assessed

for applicability to the review questions. Papers were included in the review if they (1) examined some aspect of knowledge brokers/brokering in paediatric rehabilitation; (2) contained descriptive detail of how knowledge brokers were described and used; and (3) were published in English in peer-reviewed journals. Because the primary outcome of interest was descriptive detail on how knowledge brokers were described and used, any published paper that examined some aspect of knowledge brokers/brokering in paediatric rehabilitation was considered for inclusion, with no restriction on the study design or primary aim. However, papers were excluded from the review if they were (1) studies of knowledge brokers with a goal other than enhancing practice (e.g., student teaching, research skills development) or (2) opinion articles, theses or dissertations, or abstracts of conference proceedings without full peer-reviewed papers.

Data extraction

Our data extraction process followed the steps outlined in the reviewers' manual of the Joanna Briggs Institute (JBI) System for the Unified Management, Assessment and Review of Information (2011 ed.).³⁶ Data extraction, must consider both quantitative and qualitative evidence.³⁶ The data we extracted from each full-text article included study design, knowledge broker theoretical framework, knowledge broker role description, number and type of clinicians, interventions, outcomes, and results. Data extraction was completed by the primary author (JST); the other authors then reviewed each paper and the results of the data extraction. No points of disagreement were raised.

Quality assessment

Two authors (JST, MV) reviewed the included studies for quality, using guidelines and criteria from the JBI Reviewers' Manual.³⁶ Table 1 provides the quality assessment results for the four included studies. The JBI assessment and review instruments, specific to each type of research design and methodology, were used to assess the extent to which each study was consistent with the standards of the research methodology used; each criterion is rated "yes," "no," "unclear," or "not-applicable."

Figure 1 Search Strategy

For example, one criterion in the JBI *Descriptive/Case-Series Assessment and Review Instrument*³⁶ is “was study based on a random or pseudo-random sample?”

All four studies were deemed appropriate for inclusion based on their JBI quality scores.³⁶ For the purposes of our study, improved performance of health care providers or healthcare organizations, respectively, was defined as a demonstrated (as opposed to self-reported) change in behaviour or work practice, or as an improvement in process or clinical outcomes demonstrated by change in a performance indicator that could be attributed to the introduction of a knowledge broker (or knowledge-brokering activity) within or among the paediatric rehabilitation health care providers. This definition of performance improvement was adapted from a systematic review of communities of practice.³³

Data synthesis

The four studies included in this review are diverse in their aims and designs. Because of this diversity of objectives, methods, and presentation of results, we have synthesized the findings in a qualitative manner to produce

a narrative summary, as suggested by the JBI protocol where meta-analysis is not possible.³⁶ According to JBI, the summary should include raw data as presented in the included studies, as well as information that puts the data in context, such as patient descriptions and study characteristics.³⁶ The aim of data synthesis is to assemble conclusions, categorize these conclusions, and aggregate them to generate a set of statements that adequately represent that aggregation, referred to as *synthesized findings*.³⁶ In creating the narrative summary, we analyzed and grouped study data in relation to the review questions.

RESULTS

Our search strategy identified 1875 references (titles and/or abstracts) for review, of which 1,513 remained after removal of duplicates. Review of abstracts and/or titles disqualified a further 1,496 papers that were deemed not potentially relevant to the review objective. We then obtained the remaining 17 papers for detailed review, which resulted in a total of four studies^{37–40}

Table 1 Summary of Included Studies

Primary author (Year)	Description / Sample	Role description, framework, interventions	Outcomes and results	JBI ³⁶ scoring tool: Score
Rivard (2010) ³⁷	Mixed methods / 24 clinician KBs, 122 physical therapists	<p>Clinical staff were chosen or volunteered for the 18 mo knowledge broker (KB) appointments.</p> <p>KBs' role was to adapt content to local areas, assess barriers and supports, select, tailor and implement interventions, and monitor use and outcomes, to facilitate the use in clinical practice of four evidence-based measurement tools designed to evaluate and understand motor function in children with cerebral palsy.</p> <p>KBs' supports included access to the study team, the research coordinator, and an experienced clinician who used outcome measures regularly.</p>	<p>The study found considerable variation in brokering activities among KB participants.</p> <p>The physical therapist KBs perceived their role as useful and identified organizational commitment as crucial to the success of the knowledge broker strategy.</p>	DCARI: 8/9
Glegg (2010) ³⁸	Case presentation / 13 clinician KBs from 6 disciplines (team numbers not stated)	<p>Nomination and volunteer process for recruiting and selecting KBs.</p> <p>KBs' role was to support the team/discipline in acquiring, appraising, and applying evidence in their practice.</p> <p>PARIHS framework (highlights evidence, context and facilitation as key influences in applying research evidence into practice).</p> <p>Activities included identifying knowledge and skill gaps in these areas, working with the clinical librarian and other knowledge brokers to develop strategies to fill gaps, developing and adapting resources for evidence-based practice, implementing strategies, and evaluating the effectiveness of the knowledge broker activities.</p> <p>Additional supports provided to the knowledge brokers included 8 training sessions and 2 follow-up sessions on evaluation and outstanding needs.</p>	<p>Proposition that there is a role for clinicians as knowledge brokers to facilitate the use of evidence in practice when KBs are established within a PARIHS framework.</p>	NOARI: 6/7
Russel (2010) ³⁹	Mixed methods before–after design / 25 clinician KBs, 122 physical therapists	<p>KBs were as in Rivard (2010)³⁷ above.</p>	<p>At 6 mo post-intervention, PTs' self-reported knowledge of all four measurement tools increased significantly and reported use of three of the four measurement tools also increased. Changes were sustained 12 mo later.</p>	DCARI: 8/9
Cameron (2011) ⁴⁰	Descriptive qualitative / 27 administrators from 27 clinical sites in 3 provinces	<p>As in Rivard (2010)³⁷ above with perceptions of "value" of the intervention and barriers to implementation as viewed by administrators.</p>	<p>Administrators were philosophically supportive of knowledge brokering.</p> <p>Funding and resource constraints and the absence of evidence of the effectiveness of knowledge brokering were identified as major barriers to the continuation of the roles within their facilities.</p>	QARI: 10/10

KB = knowledge broker; DCARI = Descriptive/Case-series Assessment and Review Instrument; PARIHS = Promoting Action on Research Implementation in Health Services; NOARI = Narrative/Opinion Assessment and Review Instrument; QARI = Qualitative Review Instrument.

meeting the eligibility criteria (see Figure 1). Two of these studies used mixed methods, one used qualitative methodology, and one used case presentation. Review of the four studies' reference lists did not yield additional papers for inclusion. Three of the four included studies are companion reports of research relating to a single knowledge-brokering initiative. Table 1 outlines the characteristics of the four included studies.

Rivard and colleagues³⁷ used a mixed-methods research design to collect both quantitative and qualitative data on the activities and experiences of physical therapist knowledge brokers whose primary objective was to promote the use of clinical motor measurement tools at 28 paediatric rehabilitation centres in 3 Canadian provinces (Alberta, British Columbia, and Ontario). The knowledge brokers in this study were 24 physical therapist clinicians who were nominated, volunteered, or applied for this knowledge-brokering opportunity through a job posting. Neither a research background nor familiarity with the measurement tools was required; the key attributes desired in the clinician knowledge brokers were willingness to learn about the tools and enthusiasm for the knowledge broker role. The researchers paid the organizations for the clinician time spent in knowledge brokering activities up to 2 hours per week. The knowledge brokers were given extensive learning support before adopting their roles, including interactive training materials, a workshop, reference articles, and a variety of other resource materials related to the measurement tools and the literature on knowledge sharing, knowledge transfer, and knowledge brokering. The knowledge brokering initiatives then ran over a 6-month period. The knowledge brokers were given ongoing resources throughout the intervention, including access to the project coordinator and research team members. The knowledge-brokering activities were captured in activity logs maintained by each participant. The knowledge brokers were encouraged to tailor their activities to the specific needs of the clinicians in their facilities; monitoring of the types and frequencies of their activities and contacts identified 10 different knowledge-broker activities applied at a variety of frequencies and with a variety of methods. There was substantial variation in how often the knowledge brokers used particular strategies and activities.³⁷ The qualitative component of this study explored knowledge brokers' perceptions of the utility of their roles and their experiences of knowledge brokering through semi-structured interviews conducted at the conclusion of the initiative. The qualitative data analysis confirmed support for the utility of the knowledge broker roles and identified themes related to the organizational supports required for success of knowledge brokers and knowledge broker initiatives.

Glegg³⁸ presented a theoretical framework upon which a knowledge broker initiative was designed and implemented within one clinical program in a paediatric reha-

bilitation centre. Glegg's case study described an initiative in which 13 knowledge brokers from six unspecified professional disciplines were identified through a nomination or volunteer process to work with their disciplines and inter-professional teams to support them in acquiring, appraising, and applying evidence into their practices. Before the initiative began, the knowledge brokers were supported in preparing for their roles through eight training sessions that included learning objectives related to the initiative itself, how to find the best research evidence, critical appraisal, measurement, and information synthesis. The study described the knowledge broker activities, which included developing customized resources and compiling and distributing resources through various mechanisms. The author used the experience of one team to recommend eight activities that knowledge brokers can use to facilitate evidence-based practice among team members: increase knowledge or awareness of existing evidence; enhance critical appraisal skills; increase self-efficacy or confidence of knowledge users; act as a peer model; promote accessibility of evidence in a format that fits the local context; develop, adapt and compile resources for evidence-based practice; create organization and structure; and promote teamwork and evidence-based practice values or attitudes. Further recommendations from this case study relate to sustainability of outcomes, training requirements for knowledge brokers, and funding support. To enhance sustainability of knowledge broker outcomes, Glegg recommended further developing a knowledge broker community so that knowledge brokers can more effectively support each other in their roles. Glegg also acknowledged that the training needs of knowledge brokers in different settings may vary, and that funding support for sustainability and evaluation may enhance knowledge broker initiatives.

Russell and colleagues³⁹ reported on the sustainability of outcomes and results from the knowledge broker intervention undertaken by Rivard and colleagues,³⁷ with two principal aims: to evaluate the short-term (6-month) and long-term (12-month) impact of the intervention, in terms of the sustained adoption and use of the clinical motor measurement tools in practice, and to explore factors that may have mediated or modified the intervention. They invited physical therapists who were recipients of the knowledge-brokering initiative to complete pre- and post-implementation assessments, consisting of self-report questionnaires on their knowledge and use of the motor measurement tools, using an online survey tool. The results of these assessments form the basis of the study. A total of 122 therapists completed the baseline questionnaire, 95% of whom remained in the study to the 12 month follow-up. To examine physical therapists' uptake of the measurement tools, Russell and colleagues investigated eight outcomes. Increased familiarity with all measurement tools, reported

immediately following the intervention, was sustained 12 months later³⁹; the study also found that a strong research culture and supervisor expectations were the significant factors in predicting use of one of the four measurement tools.

Cameron and colleagues⁴⁰ identified funding and resource constraints and the absence of evidence in support of knowledge brokering as major barriers to the continuation of knowledge broker roles in paediatric rehabilitation facilities. As a further component of the original research by Rivard and colleagues,³⁷ Cameron and colleagues invited nominated administrators from the paediatric rehabilitation sites to participate in semi-structured interviews designed to explore their views on (1) use of a knowledge broker to promote research uptake, (2) factors key to the success (or lack thereof) of the knowledge-brokering initiative, and (3) potential needs if they were to implement another such initiative. The results from this descriptive study indicate broad philosophical support for knowledge brokering among this sample of paediatric rehabilitation administrators. However, Cameron and colleagues' findings also highlight the need to demonstrate client and program outcomes and cost-effectiveness analysis in a business case advocating implementation of knowledge broker roles.

DISCUSSION

Our systematic review of knowledge brokers in paediatric rehabilitation identified a relative paucity of literature in this area. What does exist relates primarily to research conducted by a collaborative of Canadian researchers across several provinces. We identified four studies related to knowledge brokers in paediatric rehabilitation from the literature, reflecting a very small but focused field of study to date. Three of the four papers reported research undertaken by research teams with overlapping membership and focused on the same knowledge-brokering initiative.

Because objectives, methods, and presentation of results varied across the included studies, we synthesized the findings in a qualitative manner to produce a narrative summary that responds to the aims of our review, which were to determine (1) how knowledge brokers are defined and used in paediatric rehabilitation and (2) whether knowledge brokers in paediatric rehabilitation have demonstrably improved the performance of health care providers or organizations.

How are knowledge brokers defined and used in paediatric rehabilitation?

Consistent in the development and implementation of both of the knowledge broker initiatives we identified was a recognition of the need to anchor the roles to one of the forms (e.g., linking agent, knowledge manager) already identified in the literature. Other sectors^{14,22,33} have aligned knowledge brokers more closely to the re-

search world than to the clinical world, with knowledge brokering activities aimed at policy changes or system-level outcomes. In the studies we reviewed, however, the two knowledge broker roles described used clinician brokers, who were not required to be researchers but, rather, acted as facilitators of knowledge within their environments. In other words, the lesser-known capacity/facilitator form.

The descriptions of knowledge broker roles and activities reflect complex interventions involving a variety of activities, durations, and intervention parameters. The roles described here gave brokers the latitude to adapt their approaches to the varied needs of the clinicians they worked with and to use multiple methods. Although the activities of the knowledge brokers are sufficiently well described to derive general methods and tools, specific information on the frequency and quality of interventions is not available. It is also important to note the focus and different aims of the knowledge broker roles in the two interventions described. For these reasons, no conclusions can be drawn as to the optimum combination of knowledge brokering activities, methods and duration for producing sustained results.

Have knowledge brokers in paediatric rehabilitation demonstrably improved the performance of health care providers or organizations?

The studies we reviewed did not demonstrate this level of evidence: there is some evidence of the sustained use of evidence-based material in practice following a knowledge brokering intervention, but the data were gathered through self-report methods. Russell and colleagues³⁹ demonstrated sustainability of outcomes and results from the knowledge broker intervention undertaken by Rivard and colleagues³⁷ based on self-reported knowledge and self-reported use of the targeted measurement tools that the intervention was intended to enhance. The methodology used by Russell and colleagues, however, does offer promising opportunities for further work in this area. For example, the evidence of improved performance could have been enhanced by confirming or triangulating clinicians' self-reports through additional means, such as chart audits to confirm the use of the targeted measurement tools. Firm outcomes and evidence is required to support the implementation of knowledge broker roles. Outcomes and results are critical components to include in reporting future research in this field of study. References to the lack of evidence and reliance on anecdote as the basis for introducing knowledge-brokering roles represent an overt challenge to researchers to anchor their knowledge broker activities within a specific theoretical framework and to build in the measurement of sustained outcomes.

Further, respondents in the Cameron study cited cost-effectiveness and feasibility as factors and potential barriers both to the adoption of knowledge-brokering

roles in rehabilitation and to the sustainability of results. Cameron and colleagues⁴⁰ found that paediatric rehabilitation administrators need not only evidence of client and program outcomes but also cost-effectiveness data to build a business case in support of implementing knowledge broker roles. The need for evidence of the benefit of knowledge broker roles is to be expected in a health system with ever increasing fiscal constraints. Any administrative decision that will have a financial impact requires more than anecdotal support. The need to explore how other organizational factors (e.g., practice leadership roles) could augment knowledge-brokering activities—or, in fact, serve knowledge-brokering functions (however informally)—also warrants further discussion and research exploration.

The literature on knowledge sharing or knowledge translation in rehabilitation has generally focused on exploring strategies and clarifying terms.^{1,3–6,10,12–16,20,21,23,28–32} Our review did not identify any other papers addressing knowledge broker experiences in rehabilitation. Although several studies^{3,13,20,24} have suggested that knowledge brokers could help to close the knowledge–practice gap in health care, the effectiveness of such initiatives requires additional study.¹³

LIMITATIONS

Although we used a well-recognized systematic review methodology that included a thorough search strategy and a preliminary literature review to identify relevant search terms conceptually related to knowledge brokers, the search yielded only four papers that met our inclusion criteria. A limitation for the interpretation of the results, therefore, is the small sample size. It is possible that studies were missed in this process. To address this potential limitation, we carried out our search several times, and sought the assistance of an experienced librarian in validating the search strategy. Including an additional author in the formal screening and data-extraction steps would have strengthened the validity of the search results. Other systematic reviews^{35,41–46} have also included fewer than six studies, citing different reasons for their small sample sizes. It may be that because health professionals in knowledge-brokering roles in paediatric rehabilitation are volunteers and also hold clinical appointments, as we discovered through our review, they are challenged with competing interests and lack the time to document their experiences for peer-reviewed publication.

CONCLUSION

The published research on knowledge brokers in paediatric rehabilitation is sparse, yet reports considerable variation in how knowledge brokers have been used in this sector. The studies to date have been of good quality, and there is some self-report evidence of

sustained use of evidence-based measures in practice following a knowledge brokering intervention. Through some standardization of knowledge brokering protocols, theoretical frameworks, and evaluation tools, future research related to the use of knowledge brokers in paediatric rehabilitation can further extend our understanding of knowledge brokers as a potential mechanism for knowledge exchange and translation.

Specific future research questions might focus on knowledge broker models within a consistent framework, using activities within specified parameters and of specific duration and frequency. Building on the role of knowledge brokers in physical therapy or on clinical teams in paediatric rehabilitation may also help us understand their effectiveness. Future research should also examine the supports required to sustain knowledge-brokering models in an increasingly fiscally challenged health system.

Paediatric rehabilitation has an opportunity to inform the field of rehabilitation about the use of knowledge brokers. Given the quality of the research to date and the high specificity of this field, with continued collaboration (across Canada or internationally) and attention to standardizing some of the research parameters (e.g., theoretical framework and specific interventions), much can be contributed to the understanding of how paediatric rehabilitation can effectively use knowledge brokers.

The challenge of bridging the research–practice gap persists across the health system. Further exploration of the use of knowledge brokers as an adoption strategy in paediatric rehabilitation holds particular promise in terms of our ability to better understand what is most effective in the process of knowledge brokering. Evidence supporting its application in paediatric rehabilitation may yield insights applicable to other health care sectors.

KEY MESSAGES

What is already known on this topic

There is limited research to date addressing the use of knowledge brokers in paediatric rehabilitation, but this role continues to be adopted within rehabilitation.

What this study adds

This study provides an overview of the limited understanding of how knowledge brokers are defined and used in paediatric rehabilitation and the outcomes of investment in these roles. The study also found that knowledge broker initiatives introduced in paediatric rehabilitation have been anchored in different theoretical frameworks, and no conclusions can be drawn as to the optimum combination of knowledge brokering activities and methods or the optimal program duration for sustained results. Most importantly, this study highlights the need for and opportunities related to future research on the use of knowledge brokers.

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